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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/655,582

09/05/2003

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EXAMINER

QI, ZHI QIANG

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2871

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/655,582	Applicant(s) KASHIMA, KEIJI	
	Examiner Mike Qi	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,13 and 38-43 is/are pending in the application.
- 4a) Of the above claim(s) 3-5,7-11,14-37 and 44-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,13,38-40,42 and 43 is/are rejected.
- 7) ☒ Claim(s) 41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy was filed on July 7, 2004 according to the Image File Wrapper contained an entry for July 7, 2004, entitled "Artifact sheet indicating an item has been filed which cannot be scanned.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,646,701 B2 (Lyu et al) in view of US 5,895,106 (VanderPloeg et al), US 5,504,603 (Winker et al) and US 5,403,510 (Kajiyama et al)

Regarding claims 1 and 13, Lyu teaches (col.7, line 38 – col.8, line 8; Fig.14) A-plate compensation film (21) and C-plate compensation film (31). When the liquid crystal display device assembled together, the A-plate (21) and the C-plate (31) would be laminated together to form a laminated retardation optical element, and the C-plate (31) is optically bonded to a surface of the A-plate (21).

VanderPloeg teaches (col.8, lines 60-61; Fig.1) retarders (2) and (4) being laminated or formed together as one unit. VanderPloeg further teaches (col.10, line 57 –

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col.11, line 6; Fig.1) that the negative retarder (4) is C-plate and being laminated together to form a single sheet. Such that "laminated" means the sheets laminated together as a single sheet such as the A-plate and the C-plate of Lyn being laminated as a single sheet that would be optically bonded (any laminated together as a single sheet could be no air gap, and having optical effect would be optically bounded). VanderPloeg further teaches (col.15, lines 10-11) each retarders (4 and 7) (negative C-plate) having thickness about $1.1\text{ }\mu\text{m}$ (less $5\text{ }\mu\text{m}$, and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. (see MPEP. 2144.05 I.)), and single units making up layers (2,4) obtained from Fuji, so that would be conventional and would have been at least obvious.

Lyu and VanderPloeg do not explicitly teach that the C-plate acts as a negative C-plate; and the A-plate and the C-plate using cross-linked liquid crystal such as a cross-linked nematic liquid crystal, and a cross-linked chiral nematic which means using substantially same material so that the difference between the mean refractive indices for the A-plate and the C-plate is 0.05 or less.

Winker teaches (col.9, lines 36-40) that using negative C-plate increases the contrast ratio at large fields of view.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the compensation films of Lyu and VanderPloeg with the teachings of using negative C-plate as taught by Winker, since the skilled in the art would be motivated for achieving a high contrast ratio at large fields of view (see col.9,

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lines 36-40) as using C-plate compensation significantly reduce the light leakage (see col.6, lines 40-52).

Lyu, VanderPloeg and Winker lack using cross-linked liquid crystal as material for the A-plate and the C-plate that means using substantially same material so that the difference between the mean refractive indices for the A-plate and the C-plate is 0.05 or less.

Kajiyama teaches (col.4, lines 19 – 44) that using the cross-linked reaction, the opaque degree of the composite film is high at the opaque state. Kajiyama further teaches (col.5, lines 7-31) that the cross-linked material having a high dielectric constant and easily disperse an applied voltage so that the device uniformly display image over all the surface of the device. Because using same material for the retardation layers, the mean refractive indices would be close to each other. As a general available knowledge, the same material having the same property, and the difference between the mean refractive indices would be small (the same material or nearly same material having the same or nearly same mean refractive index, and the difference would be zero or nearly zero, i.e., less than 0.05). Therefore, the difference of the mean refractive indices is 0.05 or less would have been at least obvious.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the compensation films of Lyu , VanderPloeg and Winker with the teachings of using cross-linked material as taught by Kajiyama, since the skilled in the art would be motivated for achieving uniformly display image over all the surface

of the device as cross-linked polymer for a material of the A-plate and the C-plate would easily disperse an applied voltage (see col.5, lines 7-31).

3. Claims 2, 38-40, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyu, VanderPloeg, Winker and Kajiyama as applied to claims 1 and 13 above, and further in view of US 2004/0095532 A1 (Parri et al).

Regarding claim 2, Lyu, VanderPloeg, Winker and Kajiyama teach the invention set forth above except for that the A-plate is a $\lambda/4$ retardation layer.

Parri teaches (paragraph 0054) that A-plate being used as a QWE (quarter wave film, i.e., $\lambda/4$ retardation layer) would improve off-axis luminance and color shift.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the compensation films of Lyu, VanderPloeg, Winker and Kajiyama with the teachings of $\lambda/4$ retardation layer as A-plate as taught by Parri, since the skilled in the art would be motivated for improving the display brightness as A-plate used as a quarter wave film would improve off-axis luminance and color shift (see paragraph 0054).

Regarding claim 38, Lyu further teaches (col.1, lines 11-13; col. 7, line 38- col.8, line 8; Fig.14) that a vertical alignment (VA) mode liquid crystal cell comprising a pair of polarizers (10, 11) between which the liquid crystal cell (50) is sandwiched, and the compensation films (A-plate 21, C-plate 31) (when assembly the device, the A-plate 21 and the C-plate 31 would be laminated as the laminated retardation layer) placed between the liquid crystal cell (50) and polarizer (10); and the C-plate is situated on a side close to the liquid crystal cell (50). The claim 38 contains using the retardation layer

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of the claim 2, that limitation would be met in the claim 2, i.e., the A-plate is a $\lambda/4$ retardation layer.

Regarding claim 39, Lyu further teaches (col. 7, line 38- col.8, line 8; Fig.14) that an additional A-plate (20) placed on the liquid crystal cell (50) on a side opposite to the compensation films (A-plate 21, C-plate 31) (when assembled the device, the A-plate 21 and the C-plate 31 would be laminated as the laminated retardation layer). As the explanation above, the A-plate is a $\lambda/4$ retardation layer that is already met in the claim 2.

Regarding claim 40, Lyu further teaches (col. 7, line 38- col.8, line 8; Fig.14) that an additional polarization layer (11) placed on the additional A-plate (20) (using $\lambda/4$ retardation) on a side of opposite to the liquid crystal cell (50), and the function would be the light passing through the additional $\lambda/4$ retardation layer (A-plate 20) and controlling the state of polarization of light.

Regarding claim 42, Lyu, VanderPloeg, Winker and Kajiyama teach the invention set forth above except for that an angle between an axis of phase advance of the additional $\lambda/4$ retardation layer and the laminated retardation optical element is substantially equal to 90 degree.

VanderPloeg further teaches (col.7, lines 50-52) that the retardations (such as 4 and 7) being co-planar and oriented at 90 degree angle relative to one another in the planes of the respective films so that the angle of the axis between such two retardation layers would be substantially equal to 90 degree, and that would have been at least obvious as the co-planar relation.

Regarding claim 43, Lyu further teaches (col.4, line 45- col.5, line 4; Figs.1B and 2) that the liquid crystal layer (100) is sealed by sealant (300), and the liquid crystal molecules (3) sealed in the liquid crystal cell are twisted that would be inclined in two or more different directions when an electric field is applied.

Allowable Subject Matter

4. Claim 41 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 41 contains allowable subject matter because the prior art of record neither anticipated nor rendered obvious that a liquid crystal display having laminated retardation optical element wherein an angle between an axis of phase advance of the additional $\lambda/4$ retardation layer and an axis of transmission of the additional polarization layer is 45 ± 2 degree as shown in Fig.6A.

The reference US 2005/0151896 A1 (Hara et al) is a PCT application was not published in English and published on July 14, 2005 and the international published date is November 6, 2003. This application was filed on September 5, 2003. Therefore, such reference Hara is not a prior art. The reference US 2004/0051831 A1 (Su Yu et al) still valid as a prior art because a English translation has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Response to Arguments

5. Applicant's arguments with respect to claims 1-2,13 and 38-43 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

zoo

Mike Qi
Patent examiner
May 25, 2007